



Convention on Biological Diversity

Distr.
GENERAL

UNEP/CBD/RW-SPU-BIO/1/3
8 October 2009

ORIGINAL: ENGLISH

REGIONAL WORKSHOP ON WAYS
AND MEANS TO PROMOTE THE
SUSTAINABLE PRODUCTION
AND USE OF BIOFUELS
28-30 September 2009, São Paulo, Brazil

REPORT OF THE MEETING

INTRODUCTION

1. At its ninth meeting, in May 2008, the Conference of the Parties to the Convention on Biological Diversity, in its decision IX/2 on agricultural biodiversity: biofuels and biodiversity, called upon Parties, other Governments, the research community, and invited other relevant organizations to continue to investigate and monitor the positive and negative impacts of the production and use of biofuels on biodiversity and related socio-economic aspects, including those related to indigenous and local communities, and requested the Executive Secretary to further compile this evidence and to make it available through the clearing-house mechanism of the Convention and other appropriate means.
2. The Conference of the Parties further encouraged Parties and other Governments, indigenous and local communities, and relevant stakeholders and organizations, to inter alia share their experiences on the development and application of tools relevant to the sustainable production and use of biofuels, in relation to promoting the positive and minimizing the negative impacts on biodiversity, taking into account their full life-cycle as compared to other fuel types, by, inter alia, submitting examples to the Executive Secretary; and requested the Executive Secretary to disseminate these experiences through the clearing-house mechanism, and to compile them for consideration by the Subsidiary Body on Scientific, Technical and Technological Advice. Accordingly, the Executive Secretary issued notification 2008-100 to this effect.
3. In paragraph 12 of decision IX/2 the Conference of the Parties requested the Executive Secretary to convene regional workshops on the sustainable production and use of biofuels aiming at considering ways and means to promote the positive and minimize the negative impacts of the production and use of biofuels on biodiversity, taking into account relevant guidance from the Convention. The reports of these workshops will also be considered by the Subsidiary Body on Scientific, Technical and Technological Advice at its fourteenth meeting when preparing recommendations for consideration by the Conference of the Parties at its tenth meeting in 2010.
4. With financial support from the European Commission, the Executive Secretary convened this regional workshop for representatives from Latin America and the Caribbean. It was the first of a series of regional workshops which will be carried out throughout 2009.

/...

ITEM 1. OPENING OF THE MEETING

5. A representative of the Executive Secretary opened the meeting at 9 a.m. on Monday, 28 September 2009. He welcomed the participants and presented a statement on behalf of the Executive Secretary. He thanked the Government of Brazil for hosting this meeting and for arranging the invitation by UNICA - the Brazilian Sugarcane Industry Association – to visit the São João Sugar Mill in Araras. This would enable participants to witness firsthand the efforts towards greater sustainability in the bioethanol production and thereby facilitate rich and open discussions and the sharing of best practices for in the sustainable production and use of biofuels. The outcomes of this meeting would serve as a point of reference for similar meetings to be held for the Asia and the Pacific region as well as for Africa. It would also provide useful background for discussions on the next steps at the 14th meeting of the Convention's Subsidiary Body on Scientific, Technical and Technological Advice, to be held in Nairobi in May 2010. In closing he drew attention to the International Year of Biodiversity 2010 and the celebration of the Year on 8 January 2010 in Curitiba.

6. Minister André Corrêa do Lago, Director of the Energy Department in the Ministry of External Relations then welcomed participants and made some opening remarks on behalf of the host country. The Minister began by endorsing several opening remarks of the Executive Secretary, in particular agreeing that one problem with biofuels was the generalizations made and the need to move forward by disaggregating good from bad practice. He placed the subject of biofuel production within the context of the global consensus on sustainable development. In this, the three pillars of sustainable development (social, economic and environmental) was the appropriate framework for policy development and this is the way in which it is being discussed within the Global Bioenergy Partnership (GBEP) of which he was a Co-Chair. In Brazil, sugarcane production had a long history spanning five centuries. That had included some of the more unsavoury phases of Brazilian history, including slavery with its social injustices, inequitable land use and benefit sharing and dominance of exports in production systems.

7. That history could not be ignored as it set the backdrop for the current situation, in particular regarding labour and human-welfare aspects. Modern Brazil was committed to sustainable development. Sustainable economic benefits, social equity and environmental sustainability underpinning these are now the cornerstone of Brazilian policies. The use of sugarcane had also evolved. There had been a long history of its use for fuel with an acceleration of use for liquid biofuel in the 1960s and 1970s, particularly for transport with the introduction of the Proalcool programme. Parallel developments in the automotive industry included the early development of ethanol compatible internal combustion engines, which now dominated the passenger-car market. Sugarcane production was no longer an activity for the most economically depressed regions. The key sugar-producing areas were associated with improved regional economic health. There was an increasing contribution of biofuel to electricity supply, including the efficient use of by-products from the sugarcane industry to fuel generators. There was also much potential for the increased use of ethanol for domestic cooking, with resultant health benefits by reducing toxic fumes from other fuel sources, particularly solid fuels. It significantly reduced pressures on forest resources through unsustainable fuel-wood use. There were also social benefits through, for example, improvement in the lives of women who, instead of gathering solid fuel, could now have a better quality life, including more time for education and self-improvement.

8. Climate change was of course a key consideration in the issue of biofuels. Brazil, as for all developing countries, wished to make the best contribution it could to reducing greenhouse-gas emissions. But most developing countries did not have flexibility in their economic options regarding energy production and use. They must do the best they could within very limited economic and technical resources. Responsible policies for sustainable biofuel production and use could make significant contributions in that regard. Sustainable biofuels offered exceptional contributions to sustainable development in Brazil. But generalizations needed to be avoided. Even within Brazil, the biofuel sector was diverse. Biofuel policies needed to be sensitive to local social, economic and environmental settings, even between different locations within the same country. There was no one solution applicable to all. The consideration of biodiversity in that context was complex. The way forward was to consider the conservation and sustainable use of biodiversity within the broader context of sustainable development.

The successes in Brazil were based on multiple factors, including history, the recognition of the need to learn from past mistakes and to continually strive to improve modern approaches. Brazil had much experience in how to balance the multiple objectives of biofuel production and use, including the wise use of biodiversity. The Minister concluded by offering to share Brazil's experience with any and all other countries interested in the achievement of sustainable biofuel production and use.

ITEM 2. ORGANIZATIONAL MATTERS

2.1. Election of officers

9. In accordance with the established tradition that meetings be chaired by the host country, the Group elected Mr. Pedro Andrade, Ministry of Foreign Affairs, Brazil, as Chair.

2.2. Adoption of the agenda

10. The [provisional agenda prepared by the Executive Secretary \(UNEP/CBD/ RW-SPU-BIO/1/1\)](#) was adopted without amendment.

2.3. Organization of work

11. The meeting agreed to organize its work as contained in annex II of the present report, while retaining flexibility. The languages of the meeting were English, Spanish and Portuguese with simultaneous translation.

ITEM 3. EXPERIENCES ON THE PROMOTION OF THE SUSTAINABLE PRODUCTION AND USE OF BIOFUELS

12. A representative from the Secretariat of the Convention on Biological Diversity provided a brief overview of the experiences submitted by Parties and other Governments, indigenous and local communities, and relevant stakeholders and organizations in response to decision IX/2 through notification 2008-100. Participants were introduced to [document UNEP/CBD/RW-SPU-BIO/1/2](#) providing this information. Of almost [50 submissions received just under 20 were from Parties to the Convention](#). Only two Parties from the Latin America-Caribbean region, Brazil and Colombia, had made official submissions. Since both of these Parties were present at the meeting and scheduled to provide more detailed descriptions of their approaches and activities he gave no further details of these submissions.

13. Workshop participants were then invited to present their experiences in promoting the sustainable production and use of biofuels within the region. The following case studies were presented:

- (a) Brazilian experience with biofuels;
- (b) Eco-agricultural zoning for sugarcane and ethanol in Brazil;
- (c) Biofuels in Colombia - a challenge for sustainability;
- (d) Sustainable biofuels in Mexico;
- (e) *Jatropha curcos* - alternative fuel for sustainable development in Saint Lucia; and.
- (f) Sustainable biofuel production in Cuba.

14. A presentation about the experience with biofuels in Peru was also made available.

15. Further details of each case study are provided in annex I below.

16. After the presentations, the Chair then opened the meeting for general discussions and conclusions. The discussion generated a number of points of convergence:

- (a) There was a need for an open, frank, balanced, scientific and positive international dialogue;

(b) The topic is already being dealt with by many countries which have much experience to share - there is a clear need and opportunity to strengthen networking and information exchange within the region. Mechanisms for this need to be identified;

(c) There are good examples of the use of strategic environmental assessment (SEA) and other planning approaches at national level. This is a very useful tool to develop and assess biofuels policies. There is a need to expand such approaches to the sub-national level - including in the context of energy policy. SEA can also help to identify those areas where biofuel production can expand. It might be possible to elaborate an SEA framework common to most circumstances, adaptable according to local situations and needs;

(d) Sustainable biofuel production in some countries is being constrained by the availability of cheaper competing biofuels on the world market - in many cases distorted through subsidies;

(e) In recognition of the need to ensure that the economies of scale of big business do not over-ride the rights and needs of small-scale producers, Brazil noted that part of its biofuel policy was aimed to enhance the benefits to small-scale farmers, particularly for biodiesel. One mechanism to achieve this was through auction systems to preferentially purchase from small-scale farmers monitored through certified supply chains. Also, in the North and North-East region small-scale farmers receive incentives such as preferential tax benefits;

(f) The three pillars of sustainable development (social, economic, environment) are a useful framework within which to consider specific biodiversity aspects;

(g) Regional perspectives on biofuels should reflect developing country perspectives. These can differ from those of developed countries;

(h) Generalizations on issues, potentials and challenges should be avoided. Case-by-case assessments are required;

(i) The particular vocation of each country (social, economic, environment, resource setting, and history) needs to be recognized;

(j) There is a convergence of views recognizing the potential of biofuels in terms of social benefits, economies, energy security and environmental sustainability - although sustainable solutions are case specific;

(k) There is a need to address the various potentialities of sustainable biofuels production - in particular, the need to address benefits for poor/vulnerable populations;

(l) We must recognize the lessons from the past and learn from them;

(m) Legal frameworks/public policies are important tools;

(n) Landmarks to achieve sustainable biofuel production and use include sustainable: land use change, biodiversity, water use, soil functions and food security, with positive impacts on greenhouse-gas fluxes and energy security;

(o) Some tools are common amongst presentations including: strategic environmental assessment, positive incentives, area definitions/zoning (mapping), certification schemes, better practice in existing approaches;

(p) Productivity improvements, for both biofuel production and other agricultural and forestry systems, is the key to avoiding competing uses, indirect land use changes and negative consequences for food security;

(q) It is important to recognize and address institutional capacity constraints. These vary widely throughout the region. We need to ensure that effective policies and legal/regulatory architecture is backed by the capacity for effective implementation, including monitoring and evaluation;

(r) Good practices need to be identified, assessed and promoted. For example, opportunities during the processing phase to recycle wastes/residues. Innovative and practical local solutions are required. Each incremental benefit strengthens the achievement of sustainable biofuel production and use;

(s) There have been many international assessments. Some are problematic; for example they sometimes do not consider national/local factors/conditions or facts. For example, superficial assessments concluding that “biodiesel production increases are achieved at the cost of deforestation” are not helpful in those circumstances where this is not the case. International assessments need to adopt an impartial analysis of real conditions of practice across a very diverse sector;

(t) Indicators of sustainability are needed for both national and international purposes. They are essential to monitor progress towards development objectives and this is the current subject of discussions under the Global Bioenergy Partnership. But indicators must reflect relevant realities of sustainable development at national level;

(u) There are regional concerns that some aspects of biofuel production will be used to distort international trade for ulterior economic motives;

(v) Small island developing States (SIDS) have particular difficulties when considering their biofuel policies - these include their small populations, limited natural resources and capacity, and relative isolation from sustainable energy supplies from nearby areas. SIDS in particular noted the need for simplified practical guidance on biofuel policies applicable under circumstances of limited capacity.

ITEM 4. WAYS AND MEANS TO PROMOTE THE POSITIVE AND MINIMIZE THE NEGATIVE IMPACTS OF THE PRODUCTION AND USE OF BIOFUELS ON BIODIVERSITY

17. A representative from the Secretariat of the Convention on Biological Diversity provided a brief review of relevant guidance developed under the Convention based on more detailed information contained in document UNEP/CBD/RW-SPU-BIO/1/2. This included: The precautionary approach; the Addis Ababa Principles and Guidelines for the Sustainable Use of Biological Diversity and their further elaboration; the ecosystem approach; the voluntary guidelines on biodiversity-inclusive impact assessment; the Akwé: Kon Voluntary Guidelines for the Conduct of Cultural, Environmental and Social Impact Assessments Regarding Development on Sacred Sites and on Lands and Waters Traditionally Occupied or Used by Indigenous and Local Communities; all of the relevant CBD programmes of work; the Global Strategy for Plant Conservation; the guiding principles on alien invasive species; the application of sustainable forest management and best agricultural practices in relation to biological diversity; national biodiversity strategies and action plans; and relevant guidance developed under the Cartagena Protocol on Biosafety.

18. The group then considered how to organize its observations and findings into a framework which would enable the consideration of relevant subjects in context, based on the need to consider many inter-related and complex subjects and issues and ways and means to address them. The results of this process are provided in annex II below. The participants noted the following with regard to this framework:

(a) It is a preliminary draft subject to further elaboration;

(b) The preamble sets the context of the framework and its application;

(c) There are a number of subjects, and solutions, which relate to many others (in addition to the cross-cutting subjects identified) - flexibility in interpretation is required;

(d) The entire framework is considered “ways and means” to minimize the negative and maximize the positive impacts of the production and use of biofuels on biodiversity in the sense that biodiversity considerations are part and parcel of the objective of achieving sustainable development; biodiversity is often a “cross-cutting” consideration within this context;

(e) Considering “biodiversity” independently of such a broader framework, or using biodiversity as the first entry point into it, will potentially lead to conflict between conservation and development objectives; both development and biodiversity must be in harmony to achieve sustainable production and use of biofuels;

(f) Further elaboration is required, in particular regarding additional ways and means to specifically (more directly) consider biodiversity; for example, zoning (mapping) is included as a common approach used in many of the case studies and is multi-faceted (including zoning/mapping of soil types, landforms, socio-economic conditions, agricultural practice and other land use etc.). The framework could be enhanced through specifying biodiversity zoning/mapping tools in this approach; and

(g) The framework requires additional work in particular regarding its utility in countries with low capacity (for example, the aforementioned reference to the need for biodiversity mapping would already be implicit in mapping approaches in countries with better capacity and experience, and indeed is already included in a number of the case studies, but countries with greater capacity constraints need help not only in the specific tools but how to incorporate their use into more holistic approaches to sustainable biofuel production and use).

ITEM 5. OTHER MATTERS

19. There were no other matters raised by participants.

ITEM 6. ADOPTION OF THE REPORT AND CLOSURE OF THE MEETING

20. The Chair provided a summary of the structure and main content of the report based upon a draft prepared by the Secretariat. The Chair explained that the final report would include the agreed outcomes of the last session of the meeting (essentially the framework in annex II below) and that the report would be circulated amongst participants in the usual fashion prior to final approval.

21. The meeting closed at 1.15 p.m. on Wednesday, 30 September 2009.

Annex I

CASE-STUDIES PRESENTED

(1) Brazil's experience with biofuels¹

1. Brazil's experience with biofuels can be helpful to other developing countries. However, it is important to stress some important issues related to this new industry. Biofuels have been considered because of a great number of potential benefits, including environmental gains (lower emissions); renewability (shorter production cycle); economic aspects (new demand for the agricultural sector); social aspects (job creation and income distribution); and energy security (diversification of sources).
2. Considering that biofuels are a great opportunity for the agricultural sector, especially considering the size of the energy market, the challenge is to promote their sustainable production and use. The main responsibility of the agricultural sector is to provide food and avoid food security risks. Since the 1960s, a strong effort in research and development has been undertaken in this sense. Currently, the main driver is sustainability in its three pillars: social, economic and environmental.
3. The sustainable production and use of biofuels means respecting agricultural restrictions, especially at the local level, and strengthening investments in new, more efficient and environmentally kinder technologies. Technical progress is an important way of harmonizing energy security, food security and environmental sustainability.
4. Biofuels are an excellent opportunity for several tropical countries, especially those with a tradition in sugar cane and palm oil production, the most competitive raw materials for ethanol and biodiesel production. In the case of Brazil, besides ethanol and biodiesel, the National Agrienergy Plan also takes into consideration charcoal and wastes (e.g., sugar cane bagasse and straw, and animal fats). There are three priorities: implementing agro-ecological zoning or mapping; strengthening investments in research and technology; and supporting household farmers, especially providing access to new technologies.
5. Regarding Brazil's experience with ethanol, it is important to remember that the first tests took place in 1925. In the 1970s, as a reaction to the oil crisis, the Brazilian Government decided to invest in biofuels as a way of reducing oil dependence (imports reached more than 70% of domestic consumption, and higher prices were causing a strong unbalance in international trade). In 1979, production of cars run on ethanol brought the first revolution in the national automotive industry. Twenty-four years later, a new revolution: flexible-fuel vehicles (able to run on ethanol, gasoline or a blend of both). By 2009, just six years later, more than 8 million cars have been sold. There are more than 100 models, produced by 11 automakers. Eighty-five percent of domestic sales of new cars are flexible-fuel vehicles.
6. This success has brought sugar cane to second place among domestic energy sources, after oil, with 16% of the total. This remarkable performance is obtained with only 2% of Brazilian arable land planted with sugar cane. Renewable sources provide 46% of the domestic supply of energy, an example for other developing countries, suggesting that it is possible to move from an old biomass-based energy source to a newer alternative, in a sustainable way.
7. Ethanol brings exceptional benefits: more than 921 million barrels of oil saved; more than 850 million tonnes of CO₂ emissions avoided; important improvements in the quality of the air in large cities, especially because of the reduction of emissions of several pollutants, like particulates and sulphur. Ethanol has several advantages, including: easily produced on a large scale from a great number of raw materials; competitive costs if oil prices are higher than US\$ 60/barrel; excellent alternative to promote economic development in rural areas; low toxicity; perfect miscibility with gasoline; and excellent oxygenate.

¹ Presented by José Nilton: The full presentation is accessible from <http://www.cbd.int/doc/meetings/agr/rwspubio-01/other/rwspubio-01-biofuel-brazil-en.pdf>

8. In terms of environmental and energy concerns, sugar cane is the best alternative to ethanol. It is possible to obtain high agricultural productivity (more than 70 tonnes of raw material per year), resulting in more than 7,000 litres of renewable fuel per hectare per year. As all energy consumed in the industrial process comes from bagasse, energy balance is highly superior if compared to options like corn or wheat. This means an important reduction in total emissions. In Brazil, according to scientific studies, avoided emissions as a result of the use of ethanol as a gasoline substitute reach more than 85%.

9. This is the result of strong investments in technology: new sugar cane varieties; soil analyses and chemistry; soil conservation; appropriate fertilization; more efficient boilers; more reasonable usage of water; usage of residues, like vinasse and filter cake, as organic fertilizers. Brazil's experience can confirm that biofuels are an important way of promoting energy diversification; reducing GHG emissions; and promoting economic development without competing with food production. While Brazil's experience is an excellent point of reference for other countries; each one must find its best alternatives. The Brazilian government is open to sharing information and providing technical support to all countries interested in evaluating their potential.

(2) Eco-agricultural zoning for sugarcane and ethanol in Brazil²

1. The agro-ecological zoning for sugarcane is an unprecedented initiative, implemented by the Brazilian Government, establishing additional environmental restrictions to the installation of new industrial plants. President Lula is proposing a new bill, prohibiting the construction or expansion of sugarcane farms and production plants in any area of native vegetation, or in the Amazon, Pantanal (Brazilian Wetlands) or Upper Paraguay River Basin regions.

2. Coupled with the areas not suitable for sugarcane farming, the bill would effectively make 92.5% of Brazil's national territory off-limits for sugarcane farming and processing. In addition to the sugarcane zoning mandates, the new bill includes a measure to end the practice of crop burning by 2017 in all areas suitable for mechanized harvesting.

3. The top priority is environmental preservation. Sugarcane is an integral crop for Brazil's domestic food supply, renewable energy market, and national exports of sugar and ethanol. Demand for sugar cane products is expected to grow extremely fast in the next years. Therefore, these measures have been proposed to ensure that sustainable development models are in place to promote the responsible development of this industry.

4. Brazil's sugarcane harvests are used to produce food products as well as sugarcane-based ethanol, a biofuel alternative to gasoline. The proposal is timely, given that ethanol consumption surpassed that of gasoline in light vehicles in Brazil this year. Brazil has the largest fleet of flex-fuel cars in the world. Brazil is also currently the world's largest producer and exporter of sugarcane, using only 1% of its national land area.

5. The newly proposed bill is based upon the findings of the National Agro-Ecological Zoning for Sugarcane (ZAE Cana) study, which defined lands suitable for sugarcane production based on environmental, economic and social criteria. ZAE Cana is the largest crop survey in Brazil's history and the first ever to incorporate economic and social considerations into its proposed model for the sustainable development of the industry.

6. The ZAE Cana proposal addresses the need to regulate the expansion of sugarcane production in light of the growing global demand for food and biofuels. This proposal supports Brazil's goal to foster sustainable economic development and preserve its indigenous lands, its biodiversity, and its natural resources.

² Presented by José Nilton: The full presentation is accessible from <http://www.cbd.int/doc/meetings/agr/rwspubio-01/other/rwspubio-01-biofuel-brazil-agrozoning-port-en.pdf>

Protected lands

7. The new bill would restrict the expansion of sugarcane production plants to regions that meet the following criteria: areas that do not require full irrigation, thus saving resources such as water and energy; and areas with slopes less than 12%, allowing for mechanized harvesting and preventing producers' clearance of ground by fire. In addition, credit extension policies will favor expansion into underused or degraded pasture land.
8. These rules are not applicable to industrial facilities already in operation.
9. The criteria leave 64 million total hectares eligible for sugarcane planting, equivalent to 7.5% of the national land area. Sugarcane crops currently occupy an area of 8.89 million hectares (2008 crop year).

Respect to food security

10. The proposed Bill of Law empowers the Ministry of Agriculture to direct the expansion of sugarcane production in order to prevent any risk to food production or food security.

Eradication of ground burning

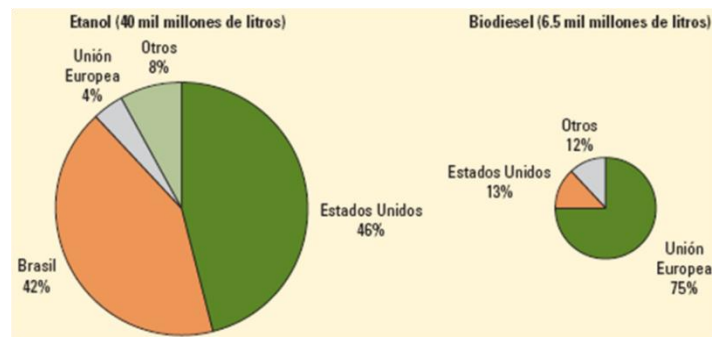
11. In addition to regulating future sugarcane expansion, the federal government is proposing an end to burnings in existing production areas. The eradication will be enforced according to a transition schedule that ends burning by 2017 in 100% of areas suitable for mechanized harvesting. This measure will allow for the reduction of greenhouse gases by six million tons of CO₂ equivalent.

(3) Biofuels in Colombia: A Challenge for Sustainable Development ³

Introduction

1. According to the International Energy Agency (IEA) publication World Energy Outlook, the world's basic energy needs will increase by 55% between 2005 and 2030, or at an average yearly rate of 1.8%. This demand will reach 17.7 billion tonnes of oil equivalent (toe) in 2030, in comparison with the 11.4 toe consumed in 2005.
2. Fossil fuels will continue to be the main energy source and oil will remain the main fuel, although its share of global demand will drop from 35% to 32%.
3. In an inertial scenario, where their consumption continues to grow, fossil fuels will contribute to the increase in CO₂ emissions. In this context, emissions are expected to increase by 57% between 2005 and 2030.
4. However, in a scenario involving greater control through alternative national policies, the measures contemplated by the world's governments could result not only in a stabilizing of global emissions toward the mid-2020s, but also in a reduction of approximately 19% in 2030 in relation to the reference 2005 scenario.
5. In this context, biomass energy can become an important alternative to fossil fuels with which to meet the increase in world energy demand, and within this perspective, biofuels can become part of the solution.
6. At present, biofuel research and development is primarily centred on two areas: bioethanol and biodiesel. The diagram below illustrates how world production of these two biofuels was distributed in 2006.

³ Presented by Ricardo Carillo: The full presentation is accessible from <http://www.cbd.int/doc/meetings/agr/rwspubio-01/other/rwspubio-01-biofuel-colombia-es.pdf>



Source: F.O. Licht Consulting Company, July 2007. World Bank World Development Report 2008 – Biofuels: The Promise and the Risks.

Spanish	English
Etanol (40 mil millones de litros)	Ethanol (40 billion litres)
Unión Europea 4%	European Union 4%
Otros 8%	Others 8%
Estados Unidos 46%	United States 46%
Brasil 42%	Brazil 42%
Biodiesel (6.5 mil millones de litros)	Biodiesel (6.5 billion litres)
Otros 12%	Others 12%
Unión Europea 75%	European Union 75%
Estados Unidos 13%	United States 13%

Concerns

7. However, there are still concerns on both fronts. On the one hand, global warming continues to seriously affect biodiversity: between 15 and 37% of the world’s species are threatened with extinction by 2050⁴ as a result of climate change. There is thus an acknowledged overwhelming need to support decision- and policy-makers to ensure the study and assessment of the impact of climate change on biodiversity, as well as changes in land use.

8. On the other hand, biomass production for biofuels also has an impact; the following are its direct effects:

- (a) changes in natural ecosystems, such as wetlands, swamps, forests, and savannahs;
- (b) the use of areas with high biodiversity, including those in which there is fragmentation and disintegration;
- (c) the loss of areas of high cultural and biodiversity value;
- (d) waste generation: ethanol production creates stillage and biodiesel production, glycerin and methanol;
- (e) a move from polycultures to monocultures, and, consequently, an increased need for agrochemicals and fertilizers;
- (f) increased water use due to the number of hectares sown;
- (g) waste water containing high levels of organic matter, as a by-product of palm oil extraction plants.

9. The indirect effects include:

- (a) the opening of inaccessible regions (construction of roads and infrastructure);

⁴ Thomas et al., 2004; Buckley and Roughgarden 2004; Harte et al., 2004

- (b) the displacement of peasant farmers and/or the purchase of their lands; these farmers generally end up farming in other areas which are increasingly less suitable and which can even extend beyond the agricultural border;
- (c) the substitution of food production or of traditional sources of income with biomass production;
- (d) qualitative and quantitative change in the aquatic systems of ecosystems;
- (e) the reduction of greenhouse gases (GHG) and low greenhouse gas emissions are among the reasons to encourage biomass energy generation; however, the biofuel production process can entail significant greenhouse gas leaks, ultimately affecting GHG levels.

Opportunities

10. Nevertheless, biofuel production could be an opportunity for developing countries for three fundamental reasons. Firstly, it would be a nation's contribution to the reduction of GHG emissions. Secondly, it would help in establishing greater balance in the energy matrix, which, at present, is extremely dependent on oil. Lastly, if properly carried out, biofuel production would provide an opportunity for rural development.

11. At the beginning of the 21st century, Colombia decided to expressly promote biofuel production, establishing legislation to foment it. The following features of this legislation bear noting:

- (a) Law 693 of 2001 (on the use of alcohol fuel in Colombia and on the creation of production incentives);
- (b) Law 939 of 2004 (on incentives for biofuel production and marketing for use in diesel engines);
- (c) Law 788 of 2002 (tax reform – tax exemption);
- (d) Law 939 of 2004 (on incentives for biofuel production and marketing for use in diesel engines).

12. Colombia has also created policies aimed at promoting the production of biomass crops and biofuel. These policies, which include measures for the sustainable development of such production and which incorporate environmental considerations, are as follows:

- (a) CONPES5 3477 / July 2007 - *Strategy for the Competitive Development of the Colombian Palm Sector*, which provides for the following:
 - i. the update of the identification and characterization of areas suitable for oil palm cultivation;
 - ii. the adoption of a biofuel policy with the participation of the Colombian Ministry of the Environment, Housing and Territorial Development (MAVDT) and other bodies;
 - iii. a specific and detailed assessment on the subject of biodiversity, environment, and agrofuel in conjunction with the Instituto de Investigación de Recursos Biológicos Alexander von Humboldt (Alexander von Humboldt Institute for Biological Resource Research; IAvH);
 - iv. the continued distribution of environmental guides for the oil palm agricultural industry (MAVDT, SAC [Colombian Farmers' Society], Fedepalma [National Federation of Oil Palm Farmers], 2002) and the sugarcane industry (MAVDT, SAC, Asocaña [Colombian Association of Sugarcane Farmers], 2002).
- (b) CONPES 3510 / March 2008 - *Policy Guidelines to Promote the Sustainable Production of Biofuels in Colombia*, is a result of the previous document. It includes the following mandates:

⁵ CONPES: Consejo de Política Económica y Social. Body which develops Colombian National Development Plan policies.

- i. The Ministry of Mining and Energy and MAVDT are to further current mixture policy and periodically analyze the viability and suitability of increasing mixture percentages.
- ii. A programme is to be developed in order to differentiate Colombian biofuels on international markets, based on their social and environmental advantages.
- iii. A programme is to be developed to harmonize biomass production and processing with the environmental and quality standards required by international markets.

Tools Developed to Achieve Sustainable Production

13. In compliance with the aforementioned mandates, MAVDT and IAvH developed the Strategic Environmental Impact Assessment (EIA) of Biofuel Policies, Plans, and Programmes in Colombia with a Focus on Biodiversity⁶. It aims to assess the cumulative, synergistic, and indirect environmental effects of policies, plans and programmes to promote biofuel, and to formulate comprehensive strategies and guidelines for environmental sustainability. It is intended to guide Colombian public policy on biofuel, and it focuses on raw material for use in ethanol and biodiesel production.

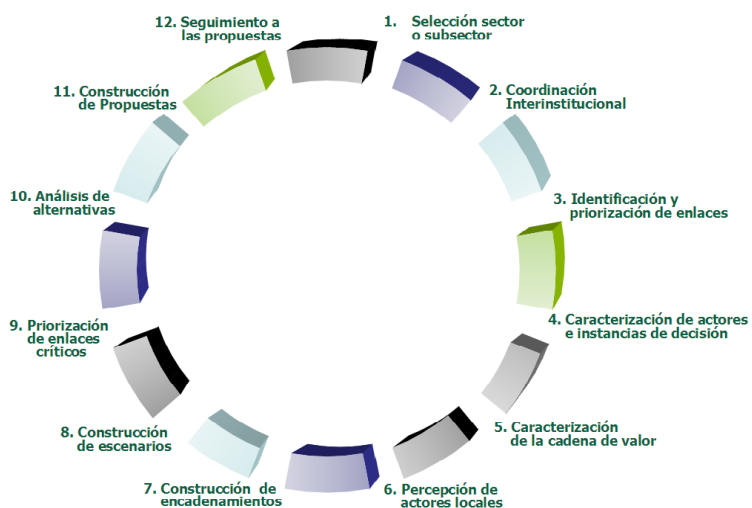
14. The study covered the following seven areas:

- (a) general points and national policy and institutions;
- (b) international policies;
- (c) the value chain;
- (d) levels and attributes of biodiversity;
- (e) environmental territorial planning;
- (f) environmental criteria;
- (g) strategic planning.

15. The study was based on the IAvH-adapted methodology for comprehensive strategic environmental impact assessments on sustainability for national biofuel policy. This methodology uses qualitative and quantitative tools which draw from secondary sources of information. The primary information was collected through participatory consultation of players and identifies models and patterns in respect of current and developing projects.

16. The EIA’s methodology elaborates the following:

17. The methodology suggests a logical path which first identifies the prioritized crops and regions. It identifies the institutions, relationships and links associated with the productive system which make it possible to formulate work hypotheses, as illustrated in the diagram.



18. It also characterizes players and value chains and describes the perception of the stakeholders concerned, thereby enabling the construction of chains and scenarios, and it leads to the analysis of alternatives and the formulation of proposals and recommendations for decision-makers.

Spanish	English
1. Selección sector o subsector	1. Selection of sector or subsector

⁶ <http://www.minambiente.gov.co/contenido/contenido.aspx?catID=348&conID=2072>

2. Coordinación interinstitucional	2. Inter-institutional coordination
3. Identificación y priorización de enlaces	3. Identification and prioritizing of links
4. Caracterización de actores e instancias de decisión	4. Characterization of players and decision-making bodies
5. Caracterización de la cadena de valor	5. Characterization of value chain
6. Percepción de actores locales	6. Perception of local players
7. Construcción de encadenamientos	7. Construction of chains
8. Construcción de escenarios	8. Construction of scenarios
9. Priorización de enlaces críticos	9. Prioritizing of critical links
10. Análisis de alternativas	10. Analysis of alternatives
11. Construcción de propuestas	11. Formulation of proposals
12. Seguimiento a las propuestas	12. Proposal follow-up

19. Another tool which was created on the initiative of MAVDT is the *Sustainability Guide for the Biofuel Chain in Colombia, Part 1: Biomass Production and Processing*. Its biodiversity component was developed with the assistance of the IAvH. This guide establishes the principles, criteria, and recommendations which pertain to environmental, social and economic sustainability and which must be observed throughout the biomass production and processing stages of the biofuel chain.

20. At present, it is an Available Normative Specification (END) and it is in the process of becoming a Colombian Technical Standard. At this stage, it does not contemplate other parts of the chain, such as transport, storage and mixture, distribution, or final consumption; these will be the subject of other technical standards.

21. This standard is voluntary. It seeks to differentiate, on the international market, the production of Colombian biofuels based on its sustainability. It also aims to address the main concerns of the international market regarding the environmental, social, and economic questions associated with biofuel production.

22. The standard is based on:

- (a) Principles: general foundations of sustainable production;
- (b) Criteria: conditions which must be met in order to comply with the principles;
- (c) Indicators: these make it possible to assess whether a farm, producer, or company meets a given criterion;
- (d) Verifiers: these make measurement or verification by third parties possible.

23. The Available Normative Specification establishes the eight following principles and fields of reference for the biofuel chain in Colombia. First, biomass production and processing:

1– Compliance with the law	<ul style="list-style-type: none"> • Applicable national legislation • International treaties and agreements
2 – Climate change mitigation and reduction of greenhouse gas (GHG) emissions	<ul style="list-style-type: none"> • Contribution to climate change mitigation; measurable, verifiable, and notifiable reduction of GHG emissions
3 – Conservation, sustainable use of biodiversity	<ul style="list-style-type: none"> • Conservation and sustainable use
4 – Environmental protection and sustainable use of natural resources	<ul style="list-style-type: none"> • Water, air and soil
5 – Respect for human rights, labour rights, and social welfare	<p>Respect for human and labour rights Property, land use, and land ownership rights The collective rights of indigenous and afro-descendant communities Individual and collective rights which are directly or indirectly</p>

	related to the projects; ensuring decent work and the welfare of workers, employees, contractors, and the chain of providers; respecting the economic, social, and cultural ethno-development of rural and local indigenous communities and peoples
6 – Respect for food security and competition with other local uses for biomass	<ul style="list-style-type: none"> • Food security must not be threatened
7 – Economic viability – contribution to local and regional development	<ul style="list-style-type: none"> • Local and regional economic and social development
8 – Commitment to transparency	<ul style="list-style-type: none"> • Transparency in decisions, public participation, special interest groups

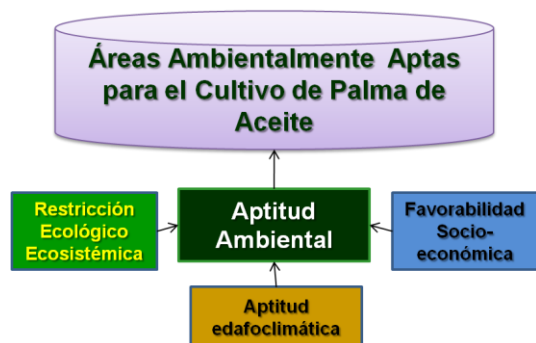
24. Finally, the *Identification and Characterization of Areas Suitable for Oil Palm Cultivation in Colombia* is a tool which was recently developed by MAVDT and coordinated by the Institute of Hydrology, Meteorology, and Environmental Studies (IDEAM). Also involved in its development were IGAC, MADR, IAVH, WWF, Cenipalma, and Fedepalma.

25. The map of areas suitable for oil palm cultivation in Colombia is up to date and its scale is 1: 500 000. It is based on environmental and socio-economic criteria from previous fiscal years.

26. The general objective of this map was to incorporate environmental criteria into the identification and characterization of areas suitable for oil palm cultivation.

27. Its specific objectives were:

(a) to develop a methodology for the inclusion of environmental criteria (ecosystemic criteria; biodiversity conservation criteria; water, soil, and land protection criteria; usage restrictions and potentialities) in the zoning of areas for oil palm cultivation



APTITUD AMBIENTAL	HAS	%
A1 (Apto)	419.501	2,34%
A2 (Limitación Moderada)	1.062.822	5,92%
A3 (Limitación Severa)	3.581.572	19,95%
Subtotal	5.063.895	28,20%
N1 (No apto)	12.893.330	71,80%
Total	17.957.224	100,00%

at a scale of 1:500 000;

(b) to develop the map of cropland suitability for oil palm cultivation at a scale of 1:500 000 in both analog and digital form;

(c) to prioritize the areas for development of subsequent zoning at a scale of 1:100 000;

(d) to conduct an analysis of the change in oil palm crop cover during the 2000-2003 period and the 2004-2007 period.

28. The map has three components and its results are as follows [sic]:

Spanish	English
Áreas Ambientalmente Aptas para el Cultivo de Palma de Aceite	Environmentally suitable areas for oil palm cultivation
Restricción Ecológico Ecosistémica	Ecological and ecosystemic restriction
Aptitud Ambiental	Environmental suitability
Favorabilidad Socio-económica	Favourability of socio-economic climate
Aptitud edafoclimática	Edapho-climatic suitability
HAS	ha

APTITUD AMBIENTAL	ENVIRONMENTAL SUITABILITY
A1 (Apto)	A1 (Suitable)
A2 (Limitación Moderada)	A2 (Moderate Limitation)
A3 (Limitación Severa)	A3 (Severe Limitation)
Subtotal	Subtotal

29. These are three of the tools which Colombia has developed as ways and means of achieving biofuel production sustainability.

(4) Mexico's Presentation on Ways and Means of Promoting the Sustainable Production and Use of Biomass Energy⁷

1. Because of its advantages, biomass as an energy source is gaining increased acceptance throughout the world as an alternative or complement to fossil fuels. Biomass energy is renewable and emits lower levels of pollutant and greenhouse gases.

2. Reasons to promote the development of a biomass energy programme include environmental sustainability; reduced dependence on fossil fuels; security of the domestic supply from local sources; and the chance to promote farming and generate employment in rural areas.

3. The two greatest challenges facing biomass energy development are the questions of how to ensure that material production does not compete with food production, and how to ensure that it does not contribute to the deterioration of the local or global environment. SEMARNAT [Mexican Secretariat for the Environment and Natural Resources] believes that it is important to promote biomass energy development and use in accordance with sustainability considerations and criteria: food production must not be affected; land use must not change; deforestation must be avoided; biodiversity must not be affected; water and air quality must not be affected; and Earth's environment must not be affected.

4. The use of biomass energy entails environmental, social, energetic, and economic expectations.

5. In Mexico, biomass energy has primarily been used as a complement to electrical energy. Twenty-four percent of the 54 500 MW installed in 2006 came from renewable energy (including hydroelectric power), only 4% of which came from biomass, mainly from the sugar industry.

6. Mexico produces almost five million tonnes of sugar and approximately 56 million litres of ethanol. The current installed capacity of distilleries is estimated at 346 000 litres per day. During the 2004-2005 sugar harvest, Mexico produced 59.3 million litres of ethanol.

7. The Government's promotion strategies are: support and promotion of the production and marketing of materials; promotion of the efficient production and use of biomass energy through support programmes for agricultural producers which encourage production of materials for biomass energy; capitalization of the agricultural sector through basic, productive, and service infrastructure works for production; establishment of bioenergy development programmes and measures with the social and private sectors; promotion of the production of bioenergy materials, so long as this does not compete with food production, compliance with standards is ensured, conservation areas are not affected, and there is no pollution of the air, water, or soil; establishment of sustainability criteria subject to certification; integration of financial instruments; establishment of guarantee funds; promotion of the use of non-agricultural land and land in semi-desert areas; and strengthening of technological research and development aimed at the development of renewable energy sources and energy efficiency. In 2008, as part of the Government's strategies, the International Bioenergy Conference took place in Guadalajara. The conference's Sustainability Panel included experts from the University of Texas, ECLAC [Economic Commission for Latin America and the Caribbean], FAO [Food and Agriculture Organization of the United Nations], REMBIO [Mexican Bioenergy Network], and the National Ecology Institute.

Legal Framework

⁷ Presented by Jorge Lestrade Pirez: The full presentation is accessible from <http://www.cbd.int/doc/meetings/agr/rwspubio-01/other/rwspubio-01-biofuel-mexico-es.pdf>

8. On 1 February 2008, the Official Gazette of Mexico published the Law on the Promotion and Development of Bioenergy. On 18 June 2009, the Regulation of the Law on the Promotion and Development of Bioenergy was published. PEMEX announced that Guadalajara would initiate the use of ethanol as an oxygenator in 2010.

9. By law, the sustainability criteria for the production of materials, as well as the criteria and guidelines for the corresponding environmental impact assessment, must be issued no later than 18 December 2009. The sustainability criteria for the production of raw material are: land use; the use of agricultural or livestock land with low profitability or of abandoned or marginal land; refraining from the use of protected areas for crop land; compliance with the Environmental Land-use Plan. Wildlife: priority conservation of areas containing endemic species of flora or fauna, or containing species which are threatened, endangered, or under special protection. Biosafety: the use of GMOs will be subject to the Law on GMO Biosafety.

Mexico's Experience

10. At the Summit for the Strengthening of the Puebla-Panama Plan (Campeche, 2007), the area of biofuels was included as a new focus of cooperation. Colombia is heading this project and Mexico is coordinating its implementation. The project comprises the establishment of pilot biofuel mills linked to the Central American Network for Biofuel Research and Development. The first stage involved the construction of three biofuel mills financed by Colombia in Honduras and El Salvador; while this was completed in 2008, the mill in Guatemala is still pending. The second stage comprises the establishment of three mills in Mexico, Panama, and the Dominican Republic, and the institution of the Central American Network for Biofuel Research and Development in Tuxtla Gutiérrez, Chiapas (established on 24 August 2009). The Mexican mill will be built in Chiapas, as the state has the necessary materials and a solid institutional and research structure. The mill will begin operations in the final trimester of 2009. On 25 February 2009, the Corporación Colombiana de Investigación Agropecuaria [Colombian Farming Research Corporation] and the Government of Chiapas signed the *Framework Agreement on Technical and Scientific Cooperation* in Bogota to begin construction of the pilot biodiesel mill.

Cooperation Measures with the German Technical Cooperation Agency GTZ

11. *Study on the Analysis of the Life Cycle of Biofuels*. Proposal for technical standards for pure and blended biodiesel and ethanol. Recommendations for technical specifications for the necessary infrastructure for biofuel management. Completion of the studies is expected in October 2009.

12. Cooperation measures between Mexico and Brazil: Memorandum of Understanding on Energy Cooperation. At the Second Binational Meeting between the President of Mexico and the President of Brazil, which took place in Brasilia on 23 July 2009, the leaders agreed to the following: cooperation measures to discuss experiences regarding the storage and management of hydrous and anhydrous ethanol; the development of pilot plantations of *Jatropha curcas* for biodiesel intended for home consumption and electricity generation in rural areas; and the joint construction of an ethanol plant in Mexico.

(5) *Jatropha curcas* - alternative fuel for sustainable development in Saint Lucia⁸

1. Saint Lucia is a small Caribbean island state with a land area of 616 km², divided into three geological regions - low rounded hills, steep terrain and gently sloping crop land. St Lucia acceded to CBD – July 28th 1993, produced its first NBSAP in 2000 (Cabinet Endorsed), 90% projects under the NBSAP have been Completed, the EU recently approved funding for an Integrated Natural Resource Management Programme, and draft legislation on Biodiversity and Sustainable Use has been produced.
2. Agriculture currently uses 24,530 acres with a mix of permanent meadows and pastures, permanent and medium term crops, and forest and woodlands. There has been an overall shift towards temporary crops in recent times. The policy centres on contributing to a diversified natural income base and enhance the quality of rural livelihoods by generating the capacity for efficient and competitive production and marketing of agricultural goods and services. The government of St Lucia has been looking at the subject of sustainable agricultural development for many years now. A key objective is reduce imports - with some successful progress achieved in recent years.
3. In the area of plant material use for the production of biofuels the following have been looked at: coconut oil, *Jatropha* oil and palm oil. The Shell group of companies has shown that they are committed to support this initiative and a private company has invested approximately \$400,000 in research work on *Jatropha curcas* in St. Lucia. The process is ongoing.
4. *Jatropha curcas* is a shrub, non edible oil producing crop predominately used to produce bio-diesel. Through the process of trans-esterification it can also be used to make a wide range of products including energy pellets, organic manure, soap, paper, cosmetics, toothpaste, pipe joint cement, and as a moistening agent in tobacco. Biodiesel (fatty acid alkyl esters) is a cleaner burning diesel replacement fuel made from natural, renewable sources such as new and used vegetable oils and animal fats. Just like petroleum diesel, biodiesel operates in compression ignition engines. *Jatropha* is eco-friendly and easy to use and does not compete with edible plants. It is often grown as a mixed crop - particularly with ginger.
5. The process of development is ongoing with a few glitches. The key constraints to the development of the sector relate to those typical of small island developing states (SIDS) including limited land availability, small populations and the economy of small-scales. Saint Lucia, as other SIDS, also have considerable capacity constraints when attempting to develop policies and programmes for sustainable biofuel production including reconciling the objectives of energy and food security. Capacity building support and the transfer of relevant technology are critical needs.

⁸ Presented by Rufus Leandre: The full presentation is accessible from <http://www.cbd.int/doc/meetings/agr/rwspubio-01/other/rwspubio-01-biofuel-st-lucia-jatropha-en.pdf>

(6) Biofuels in Cuba²

1. The development and exploitation of alternative energy sources is a priority for Cuba. Biomass is an alternative source of renewable energy with various options for its conversion into and use as biofuel. It merits “promoting the development and use of renewable energy, guaranteeing the sustainable development of the economy through increased energy supply and an improved energy framework. Concomitantly, energy security, food security, and environmental protection are ensured”.
2. The production and use of biofuels in Cuba entails compliance with the following requirements:
 - (a) food must not be turned into fuel;
 - (b) biofuel production must not compete with food production in terms of the use of resources, such as soil and water;
 - (c) biofuel production must be ecologically and economically sustainable;
 - (d) priority must be given to the use of biofuels for food production and for the improvement of the population’s standard of living.
3. Cuba’s sugarcane biomass and forest biomass are important alternative sources of renewable energy. The sugar industry uses the bagasse it produces to generate all the heat and electrical energy it consumes. The industry also produces a surplus of energy which supplies the national electrical power grid.
4. Because of its high biomass yield, high content of high-quality fibre, and acceptable sugar juice content, the development of energy-producing sugarcane is valued as having a high potential for contribution to the energy industry.
5. Cuba’s forest development industry is one of the country’s greatest biomass producers. The annual yield of useable forest biomass from reasonable forest management and wood processing constitutes an important supply of fuel equivalent. Cuba has a programme for the use of biomass as solid fuel in heat and electricity generation. The programme employs biomass gasification technology which uses and assimilates biomass to produce a lean gas. This gas is supplied to internal combustion engines for electricity generation and to furnaces and ovens for heat generation.
6. The country is carrying out measures in the areas of research, development, production, and use of liquid biofuels.
7. In the area of biofuel production and use, efforts are focused on finding non-edible oilseed plants, such as *Jatropha curcas*, castor-oil plant, and others. Studies are being conducted in the areas of agricultural research, oil extraction, conversion into biodiesel, and the assessment of biofuel use in blends for conventional engines. Similar studies are being conducted on microalgae.
8. Work is being carried out on fuel ethanol production from filter juice and the use of anhydrous alcohol in gasoline blends for the automobile population. Several universities and research centres are studying the production of cellulosic ethanol from sugarcane bagasse and other cellulosic residue.
9. A regulatory framework is being developed for renewable energy sources, including biofuel.

² Presented by Yoel Suarez Lastre: The full presentation is accessible from <http://www.cbd.int/doc/meetings/agr/rwspubio-01/other/rwspubio-01-biofuel-cuba-es.pdf>

Annex II

A DRAFT CONCEPTUAL FRAMEWORK FOR WAYS AND MEANS TO MINIMIZE THE NEGATIVE AND MAXIMIZE THE POSITIVE IMPACT OF BIOFUEL PRODUCTION AND USE ON BIODIVERSITY

Recognizing the role of the CBD with regard to the biodiversity-related aspects of the production and use of biofuels; also recognizing that some of the tools outlined below are the responsibility of national governments while other tools are already being developed by other relevant international organizations and initiatives; the participants:

- (a) emphasized the importance of framing the discussion on biofuels within the context of sustainable development and its three pillars;
- (b) recognized the potential contribution of biofuels for the achievement of sustainable development, for energy security, rural development and the achievement of the Millennium Development Goals;
- (c) highlighted the need to convey a developing country perspective to the discussion;
- (d) noted the need to avoid generalizations when assessing the potential impacts of biofuel production and use by case-by-case assessments that take into account national or sub-national circumstances;
- (e) recognized the potential for regional cooperation among Latin American and Caribbean countries towards the sustainable production and use of biofuels; and
- (f) noted the different stages of development within the region with regards to biofuels production and use.

Sustainability Pillar	Approach	Tools
<i>Environmental Pillar</i>	Environmentally sensitive planning and assessment	Use of Strategic Environmental Assessment Area definitions/zoning (mapping) Biodiversity-inclusive SEA guidelines (VIII/28) Brazil and Colombia presentations (see Annex 1 above)
	Technical environmental standards (national) for biofuels 1. technical specification for biofuel 2. certification of biofuel production	Voluntary certification schemes (see Colombia presentation) Public policies and legislation Apply national legislation regarding permitted uses in ecosystems
<i>Economic Pillar</i>	Development of international market for sustainable biofuels	Policies to promote market access for developing countries Avoid generalization concerning natural ecosystems in producer countries

Sustainability Pillar	Approach	Tools
		<p>Developing capacity of, and technology transfer to, developing countries including SIDS, to participate in the international market for biofuels</p> <p>South-South and triangular cooperation</p> <p>Trade agreements (e.g. CBI)</p>
	Energy security	Insert in NBSAPs
	Positive incentives	CBD decision and guidance (minimize effects on livelihoods in third countries)
<i>Social Pillar</i>	<p>Equity</p> <p>Benefits to small-scale farmers and poor/vulnerable populations</p> <p>Job creation</p> <p>Dignification of work ('decent jobs')</p> <p>Food security</p>	<p>Public policies creating decent jobs and income (both private sector and legislation)</p> <p>Voluntary mechanisms in production sector to promote strategic partnerships (e.g. between small and large producers)</p> <p>Programmes to respond to displacement of labour through mechanization according to national and regional circumstances</p> <p>Agricultural policies to harmonize production of biofuels and foodstuff, including the utilization of other foodstuff</p> <p>Strengthen technology transfer to promote sustainability (species choice etc.) increase productivity (ensure food production), including access to small machinery for small producers</p> <p>Sponsorship of programmes for social responsibility</p>
<i>Crosscutting issues</i>	Expansion of international cooperation	Bilateral and trilateral cooperation, relevant international organizations and initiatives, including FAO, GBEP and CBD.

Sustainability Pillar	Approach	Tools
	Access to information and information dissemination	<p>Promote the creation and strengthening of regional networks for the exchange of information, taking into account existing initiatives</p> <p>Documentation and dissemination of national experiences, including through the CHM and other means</p>
	Legal framework and public policies	<p>Exchange of experiences on national legal frameworks and public policies</p> <p>Communication strategies to promote public participation and awareness-raising</p>
	Best practices, including best practices for other agricultural commodities	<p>Promote the application of best practices through increase of productivity and sustainability for biofuel production systems for biodiversity conservation</p>
	Institutional capacity building	<p>Promote identification of capacity needs</p> <p>Apply an integrated and interdisciplinary approach</p>
	Sustainability assessments	<p>Contribute to and use recommendations generated through initiatives seeking to create indicators for sustainable biofuels</p> <p>Life cycle analysis, taking into account regional/local circumstances, and use of feedstock</p>
	Technology transfer and identification of common research needs	<p>Promote traditional plant breeding and genetic improvement to achieve higher productivity and sustainability of production systems</p> <p>Promote the adoption of cleaner technologies</p> <p>Promote the exchange of information and research cooperation to strengthen the national development of research for the production of second-generation biofuels</p>

Annex III
LIST OF PARTICIPANTS

Antigua and Barbuda

1. Mr. Owolabi Elabanjo
Extension Technical Officer
Ministry of Agriculture, Lands, Environment, Marine Resources and Agro-Industries
Independence Avenue
St. John's
Antigua and Barbuda
Tel.: 12687641268
E-Mail: owo_labi_1@yahoo.com

Argentina

2. Dr. Lorena Herrera
Recursos Naturales y Gestion Ambiental
Instituto Nacional de Tecnologia Agropecuaria
Ruta 226 KM 73.5 Balcarce
Buenos Aires
Argentina
Tel.: +54 02266 439100 int 757
E-Mail: herrera@balcarce.inta.gov.ar, herrera@mdp.edu.ar

Belize

3. Mr. Gilroy Lewis
Director
Solid Waste Management Authority
Ministry of Natural Resources and Environment
Forest Drive
Belmopan City
Belize
Tel.: (501)6684852 or (501)8221527
E-Mail: lewisgilroy@gmail.com

Brazil

4. Mr Pedro Andrade
Second Secretary
Environment Division
Ministry of External Relations
Esplanada dos Ministerios, Bloco H, Anexo I
Brazilia 70170-900
Brazil
Tel.: +5561 3411 8453
Fax: 55-61 3411 8446
E-Mail: pafca@mre.gov.br
Web: www.mre.gov.br
5. Ms. Claudia Borges
Ministry of External Relations
Esplanada dos Ministerios, Bloco H, Anexo I
Brazilia 70170-900
Brazil
Tel.: 55 61 34118450
E-Mail: cborges@mre.gov.br
Web: www.mre.gov.br
6. Mr. Pedro Brancante
Ministry of External Relations

Esplanada dos Ministerios, Bloco H, Anexo I
Brazilia 70170-900
Brazil
E-Mail: pbrancante@mre.gov.br
Web: www.mre.gov.br

7. Mr. André Corrêa do Lago
Director
Energy Department
Ministry of External Relations
Esplanada dos Ministerios, Bloco H, Anexo I
Brazilia 70170-900
Brazil
E-Mail: alago@mre.gov.br
Web: www.mre.gov.br

8. Dr. Bráulio Dias
Director of Biodiversity Conservation
Ministry of Environment
Avenida W2 Quadra 505 Norte
Edifício Marie Prendi Cruz, Sala 416
Brazilia DF 70730-542
Brazil
Tel.: +55 (61) 3152027/2028
E-Mail: braulio.dias@mma.gov.br
Web: www.mma.gov.br

9. Mr. José Nilton
Ministry of Agriculture
Esplanada dos Ministerios Bloco "D"
Brazilia DF
Brazil
Web: <http://cpatu.embrapa.br>

Chile

10. Ms. Nancy Aura Manriquez Donoso
Professional of Atmospheric Decontamination Area
Comision Nacional del Medio ambiente (CONAMA)
Teatinos 258, Piso 6
Santiago
Chile
Tel.: (56-2)9569150
E-Mail: nmanriquez.rm@conama.cl

Colombia

11. Dra. Elzbieta Bochno Hernandez
Ministerio de Agricultura y Desarrollo Rural
Colombia
Tel.: (57 1)3341199 ext.322
E-Mail: ebochno@minagricultura.gov.co
12. Dr. Ricardo Carillo Carillo
Instituto Alexander Von Humboldt
Avenida Carrera 30 N 48-51
Bogota
Colombia
Tel.: (57 1) 3202767 ext. 243
E-Mail: rcarrillo@humboldt.org.co
Web: <http://www.humboldt.org.co>

Cuba

13. Mr. Yoel Suarez Lastre
Member of the Working Group on Biofuels
CUBAENERGIA
Ministerio de Ciencia, Tecnologia y Medio Ambiente
Capitolio Nacional,
Prado y San José, CP 10200
Havana
Cuba
E-Mail: yoelsuarez@geprop.cu, alvarado@cubaenergia.cu

El Salvador

14. Dr. Jorge Ernesto Quezada Diaz
General Director
Directorate of National Heritage
Ministerio de Medio Ambiente y Recursos Naturales
Kilometro 5 1/2 Carretera a Santatecla, Calle y Colonia las Mercedes
Edificio MARN Instalaciones Ista.
San Salvador
El Salvador
Tel.: +503 2267 9330
Fax: +503 2 267 9326 / 17
E-Mail: jquezada@marn.gov.sv, jordiquebu@hotmail.com
Web: <http://www.marn.gob.sv>

Jamaica

15. Dr. Betsy Bandy
Director, Mine Development and Mineral Lands Management
Policy, Planning and Development Division
Ministry of Energy and Mining
PCJ Building
36 Trafalgar Road
Kingston 10
Jamaica
Tel.: 876-929-8990-9 or 876 564 6560
E-Mail: bbandy@mem.gov.jm

Mexico

16. Mr. Jorge Lestrade Pirez
Subdirector de Residuos Mineros
Secretaría de Medio Ambiente y Recursos Naturales (Mexico)
Blvd. Adolfo Ruiz Cortinez, No. 4209 4o. Piso ala "B"
Col. Jardines en la Montana, Tlalpan 14210
Mexico D.F.
Mexico
Fax: +52 (55) 5628 07 58
E-Mail: jorge.lestrade@semarnat.gob.mx
17. Mr. Sergio Novelo Rosado
Director General de Energia y Actividades Extrativas
Secretaría de Medio Ambiente y Recursos Naturales (Mexico)
Blvd. Adolfo Ruiz Cortinez, No. 4209 4o. Piso, ala "B"
Col. Jardines en la Montana, Tlalpan 14210
Mexico D.F.
Mexico
Fax: +52 (55) 5628 07 58
E-Mail: sergio.novelo@semarnat.gob.mx

Peru

18. Mr. Gustavo Vivanco
Specialist responsible for renewable energy and biofuels
Ministry of Environment
Ave. Guardia Civil 205
San Borja
Lima 41
Peru
Tel.: (51 1)2255370 ext 274 or 511 996576577
E-Mail: gvivanco@minam.gob.pe, gustavovivancom@yahoo.com

Saint Lucia

19. Mr. Rufus Theophilus Leandre
Chief Extension Officer
Ministry of Agriculture, Lands, Fisheries and Forestry
Sir Stanislaus James Building, 5th Floor
Waterfront
Castries
Saint Lucia
Tel.: +758-452 5296/468-4128/4129
Fax: +758-453-6314
E-Mail: ps@slumaffe.org, aoe@slumaffe.org
Web: <http://www.slumaffe.org>

Uruguay

20. Ing. Agr. Elisa Dalgarrondo
Departamento de Biodiversidad
Ministerio de Vivienda Ordenamiento Territorial y Medio Ambiente
Galicia 1133, entre piso
Montevideo
Uruguay
Tel.: 59829170710 ext4456
Fax: 59829170710 ext4410
E-Mail: elidal@adinet.com.uy
Web: <http://www.dinama.gub.uy>

Venezuela

21. Dr. Silvia Llamozas
Director of Vegetation
Oficina Nacional de Diversidad Biologica
Ministerio del Poder Popular para el Ambiente
Torre Sur, Piso 6, Centro Simon Bolivar, El Silencio
Ofic. 600
Caracas
Venezuela
Tel.: (+58 212) 4081515/1516/4800
Fax: (+58 212) 408 1517
E-Mail: sllamozas@minamb.gob.ve
Web: <http://www.minamb.gob.ve>

OBSERVERS

UNICA - Brazilian Sugarcane Industry Association

22. Mr. Luiz Fernando Amaral
Environmental Advisor
UNICA - Brazilian Sugarcane Industry Association
Brazil
E-Mail: luiz@unica.com.br
23. Ms. Nayana Rizzo
Institutional Relations
UNICA - Brazilian Sugarcane Industry Association
Brazil
Tel.: 55 11 3093.4949
Fax: 55 11 3812.1416
E-Mail: nayana@unica.com.br

Instituto de Estudos do Comercio e Negociacoes Internacionais

24. Mr. Rodrigo C.A. Lima
Prequisador
Instituto de Estudos do Comercio e Negociacoes Internacionais
Av. General Furtado Nascimento
740 conj. 81 Alto de Pinheiros
Sao Paulo 05465.070
Brazil
Tel.: +5511 3021 0403
Fax: +5511 3021 0403
E-Mail: rlima@iconeBrazil.org.br

SCBD

Secretariat of the Convention on Biological Diversity

25. Mr. David Coates
Programme Officer
Inland Water Biological Diversity
Secretariat of the Convention on Biological Diversity
413 St. Jacques Street, Office 800
Montreal Quebec, H2Y 1N9
Canada
E-Mail: david.coates@cbd.int
Web: <http://www.cbd.int>
26. Mr. Robert Höft
Environmental Affairs Officer, Scientific Assessment
Scientific, Technical and Technological Matters
Secretariat of the Convention on Biological Diversity
413 St. Jacques Street, Office 800
Montreal Quebec, H2Y 1N9
Canada
E-Mail: robert.hoft@cbd.int
Web: <http://www.cbd.int>
